

Claims

1. A communication system including a first communication terminal, a second communication terminal, and a communication control server, the communication control server notifying destination information for specifying an address of the second communication terminal on a network, and the first communication terminal transmitting a request message to the communication control server to request the destination information,

10 the communication control server comprising:

a permitted-terminal table storage unit operable to store a permitted-terminal table that shows correlation between the second communication terminal and one or more connection-permitted communication terminals that are permitted to connect to the second communication terminal;

a request message reception unit operable to receive the request message;

a terminal determination unit operable to determine, based on the permitted-terminal table, whether or not the first communication terminal that transmitted the received request message is a connection-permitted communication terminal; and

a notification control unit operable to notify the first communication terminal of the destination information, only when the first communication terminal has been determined to be a connection-permitted communication terminal.

2. The communication system of Claim 1, wherein the notification control unit includes:

an authentication information creation sub-unit operable to, only when the first communication terminal has been determined to be a connection-permitted terminal, create authentication information for the second communication terminal to authenticate the first communication terminal, the notification control unit further notifies the authentication information to the first communication terminal and the second communication terminal,

the first communication terminal transmits the notified authentication information to the second communication terminal when making a connection request to the second communication terminal, and

the second communication terminal comprises:

a reception unit operable to receive the authentication information from the first communication terminal;

a determination unit operable to determine whether or not the received authentication information and the notified authentication information match; and

a connection control unit operable to permit a connection from the first communication terminal, only when the received authentication information and the notified authentication information match.

3. The communication system of Claim 1, wherein

the notification control unit includes:

an encrypt key creation unit operable to create an encrypt key for encryption and decryption of information transmitted between the first communication terminal and the second

communication terminal, and

the notification control unit further notifies the encrypt key to the first communication terminal and the second communication terminal.

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4. The communication system of Claim 1, wherein

the notification control unit further, before notifying the first communication terminal of the destination information of the second communication terminal, transmits a query message to the second communication terminal, the query message querying as to whether or not the second communication terminal is able to accept a connection from the first communication terminal,

the second terminal comprises:

a reception unit operable to receive the query message; and

15 a connection acceptability notification unit operable to determine, according to a load state upon receiving the query message, whether or not the connection from the first communication terminal is able to be accepted, and notify the communication control server of an acceptability notification message that shows a result of the determination,

the notification control unit includes:

a connection acceptability determination sub-unit operable to determine, based on the notified acceptability notification message, whether or not the second communication terminal is in a state of being able to accept the connection from the first communication terminal, and

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when the second communication terminal is in a state of being able to accept the connection, the notification control unit notifies

the first communication terminal of the destination information.

5. The communication system of Claim 4, wherein

when the first communication terminal is determined not to
5 be a connection-permitted terminal, the notification control unit
notifies the first communication terminal of a notification message
showing that the first communication terminal is not permitted to
connect to the second communication terminal, and

when the second communication terminal is in a state of being
10 unable to accept the connection from the first communication terminal,
the notification control unit notifies the first communication
terminal that the second communication terminal is unable to accept
the connection.

15 6. A communication terminal that is connected to a communication
control server over a network, comprising:

a permitted-communication terminal registration request unit
operable to make a request, to the communication control server,
to register one or more communication terminals that are permitted
20 to connect to the communication terminal;

an authentication information reception unit operable to, when
a communication terminal that has requested destination information
for specifying an address of the communication terminal on the network
is any one of the communication terminals that are permitted to connect
25 to the communication terminal, receive authentication information
for authenticating the communication terminal that requested the
destination information;

an identification information reception unit operable to

receive, from the communication terminal that requested the destination information, a connection acceptance request and identification information that identifies the communication terminal that requested the destination information;

5 a determination unit operable to determine whether or not the authentication information and the identification information match; and

 a connection control unit operable to permit a connection based on the connection acceptance request from the terminal that requested
10 the destination information, only when the authentication information and the identification information match.

7. The communication terminal of Claim 6, wherein

 the identification information reception unit further, before
15 the connection acceptance request is transmitted, receives a query message from the communication control unit, the query message querying whether or not a connection from the communication terminal that requested the destination information is able to be accepted, and

20 the connection control unit determines whether or not the connection from the first communication terminal is able to be accepted according to a load state upon receiving the query message, and notifies the communication control server of a result of the determination.

25 8. The communication terminal of Claim 7, wherein

 the identification information reception unit, when the communication terminal is in a state of being unable to accept the connection from the communication terminal that requested the

destination information, receives a transfer ask notification message from the communication control server, the transfer ask notification message notifying that a communication data transfer ask has been made by the communication terminal that requested the destination
5 information, and

the communication terminal comprises:

a communication data acquirability determination unit operable to determine, according to a load state, whether or not the communication terminal has come to be in a state of being able to
10 acquire the communication data;

a transfer request message transmission unit operable to, when the communication terminal has come into a state of being able to acquire the communication data after the transfer ask notification message has been received, transmit a transfer request message that
15 requests transfer of the communication data; and

an acquisition unit operable to acquire the communication data transmitted from the communication control server in response to the transfer request message.

20 9. The communication terminal of Claim 6, further comprising:

a storage unit operable to store a plurality of types of communication data potentially transmitted to a callee communication terminal, each type of communication data being stored in correspondence with a respective data attribute thereof;

25 a transmission unit operable to transmit a request message to the communication control server, the request message requesting destination information for specifying the address of a callee communication terminal on the network;

an acquisition unit operable to obtain the destination information notified by the server, only when the communication terminal is permitted to connect to the callee terminal;

5 a connection establishment unit operable to establish a connection with the callee communication terminal based on the acquired destination information;

a designation reception unit operable to receive a designation of communication data to be transmitted;

10 a data attribute determination unit operable to determine whether or not the designated communication data has a specific data attribute;

a transfer ask unit operable to, when the designated communication data has the specific data attribute, ask the communication control server to transfer the designated communication data to the callee communication terminal; and

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a transmission control unit operable to control such that (i) when the designated communication data has the specific data attribute, the designated communication data is transmitted to the communication control server, and (ii) when the designated communication data does not have the specific data attribute, the designated communication data is transmitted directly to the callee terminal.

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10. The communication terminal of Claim 9, wherein the transmission control unit includes:

25 an extraction sub-unit operable to, when the designated communication data is MPEG-encoded video data, extract an I picture from the video data; and

an encryption sub-unit operable to encrypt the extracted

I picture,

the transfer ask unit asks that the encrypted I picture be transferred to the callee communication terminal, and

the transmission control unit transmits the encrypted I picture
5 to the communication control server, and transmits remaining video data excluding the I picture directly to the connected callee communication terminal.

11. The communication terminal of Claim 9, wherein
10 the data attributes show whether or not the communication data is secret,

the transfer ask unit, when the data attribute of the designated communication data shows that the designated communication data is secret, asks the communication control server to transfer the
15 designated data to the callee communication terminal, and

the communication control unit, when the data attribute of the designated communication data shows that the designated communication data is secret, encrypts the designated communication data, and transmits the encrypted designated communication data to
20 the communication control server.

12. The communication terminal of any of Claims 6 to 11, wherein the address is an IP address.

25 13. The communication terminal of any of Claims 6 to 11, wherein the address is composed of an IP address and a port number.

14. The communication terminal of any of Claims 6 to 13, wherein

the address changes from time to time.

15. A communication control server that notifies destination information for specifying an address of a communication terminal,
5 comprising:

a permitted-terminal table storage unit operable to store a permitted-terminal table that shows correlation between the communication terminal and one or more connection-permitted communication terminals that are permitted to connect to the
10 communication terminal;

a request message reception unit operable to receive a request message from a request-source communication terminal, the request message requesting the destination information;

a terminal determination unit operable to determine, based
15 on the permitted terminal table, whether or not the request-source communication terminal is a connection-permitted communication terminal; and

a notification control unit operable to notify the request-source communication terminal of the destination information
20 of the communication terminal, only when the request-source communication terminal is determined to be a connection-permitted communication terminal.

16. A connection control program used in a communication terminal
25 that is connected to a communication control server over a network, the connection control program comprising:

a permitted-communication terminal registration request step of making a request, to the communication control server, to register

one or more communication terminals that are permitted to connect to the communication terminal;

an authentication information reception step of, when a communication terminal that has requested destination information
5 for specifying an address of the communication terminal on the network is any one of the communication terminals that are permitted to connect to the communication terminal, receiving authentication information for authenticating the communication terminal that requested the destination information;

10 an identification information reception step of receiving, from the communication terminal that requested the destination information, a connection acceptance request and identification information that identifies the communication terminal that requested the destination information;

15 a determination step of determining whether or not the authentication information and the identification information match; and

a connection control step of permitting a connection based on the connection acceptance request from the terminal that requested
20 the destination information, only when the authentication information and the identification information match.

17. A computer-readable recording medium on which is recorded a connection control program used in a communication terminal that
25 is connected to a communication control server over a network, the connection control program comprising:

a permitted-communication terminal registration request step of making a request, to the communication control server, to register

one or more communication terminals that are permitted to connect to the communication terminal;

an authentication information reception step of, when a communication terminal that has requested destination information for specifying an address of the communication terminal on the network is any one of the communication terminals that are permitted to connect to the communication terminal, receiving authentication information for authenticating the communication terminal that requested the destination information;

an identification information reception step of receiving, from the communication terminal that requested the destination information, a connection acceptance request and identification information that identifies the communication terminal that requested the destination information;

a determination step of determining whether or not the authentication information and the identification information match; and

a connection control step of permitting a connection based on the connection acceptance request from the terminal that requested the destination information, only when the authentication information and the identification information match.

18. A connection control method used in a communication terminal that is connected to a communication control server over a network, the connection control method comprising:

a permitted-communication terminal registration request step of making a request, to the communication control server, to register one or more communication terminals that are permitted to connect

to the communication terminal;

an authentication information reception step of, when a communication terminal that has requested destination information for specifying an address of the communication terminal on the network
5 is any one of the communication terminals that are permitted to connect to the communication terminal, receiving authentication information for authenticating the communication terminal that requested the destination information;

an identification information reception step of receiving,
10 from the communication terminal that requested the destination information, a connection acceptance request and identification information that identifies the communication terminal that requested the destination information;

a determination step of determining whether or not the
15 authentication information and the identification information match;
and

a connection control step of permitting a connection based on the connection acceptance request from the terminal that requested the destination information, only when the authentication information
20 and the identification information match.